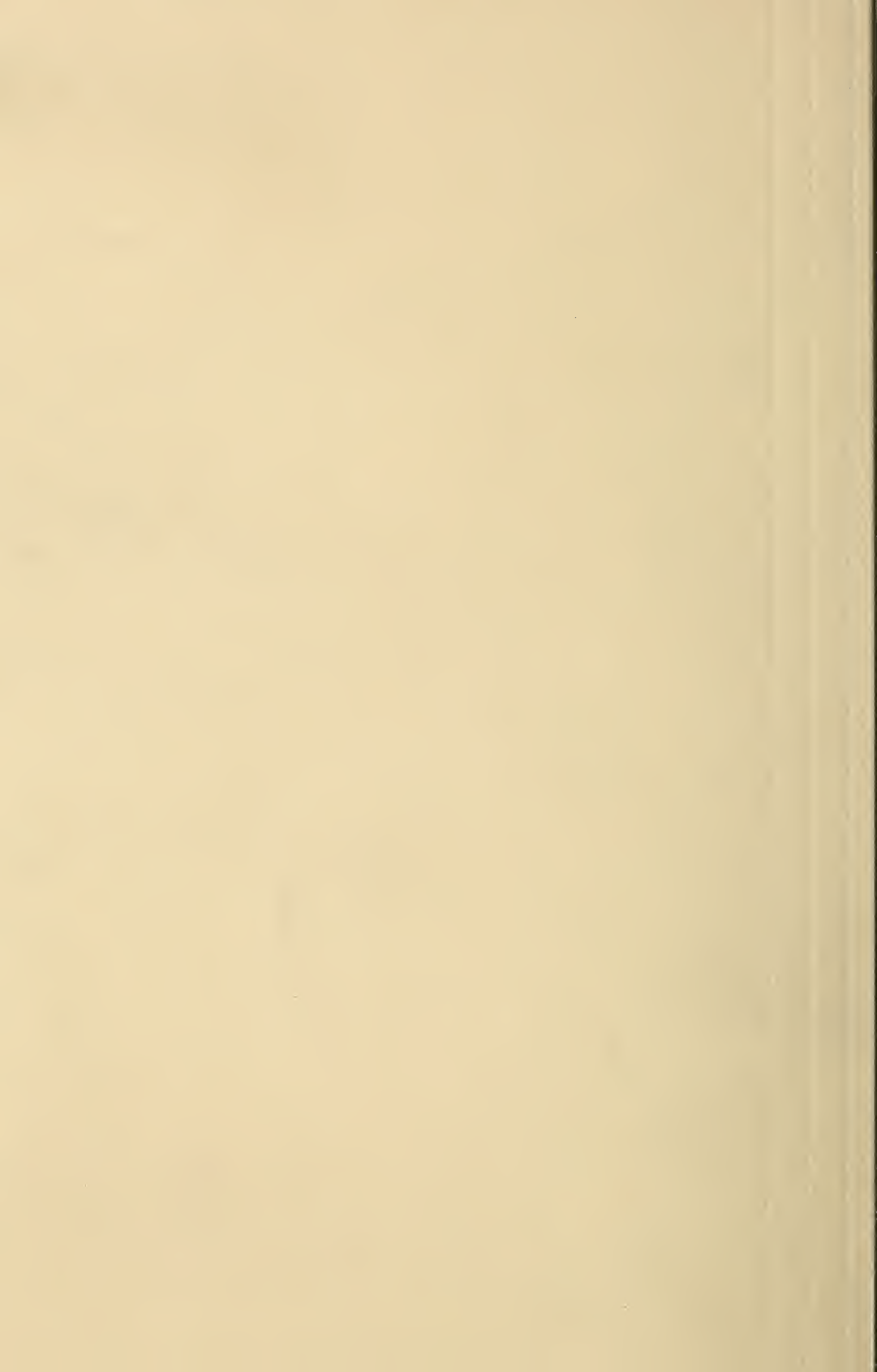


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THE GOLDEN NEMATODE

of potatoes
and tomatoes

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PROCUREMENT
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THE GOLDEN NEMATODE

of potatoes and tomatoes

The golden nematode, a tiny eelworm, is one of the most damaging pests of potatoes. It also attacks tomatoes and eggplants.

A serious pest in Europe, the golden nematode was first found in the United States in 1941, in a potato field on Long Island. In 1967, it was found in Steuben County, N.Y. and, in 1969, in New Castle County, Del. The infestation in Delaware has been eradicated.

Although confined primarily to Long Island through a cooperative Federal-State control program, the golden nematode remains a major threat to this country's \$800 million potato industry.

DAMAGE

The golden nematode bores into the roots of potatoes and feeds on their juices. Because nematodes do not cause immediate damage to the aboveground part of an infested plant, they often go undetected for years.

Poor growth of plants in one or more small spots of a potato field is usually the first sign of an infestation. As the infestation builds up, the spot becomes larger and new damaged areas appear. Eventually the entire field shows poor growth.

Heavy infestations cause wilting (particularly at midday during dry weather), stunted growth, poor root development, and early plant death.

DEVELOPMENT

The golden nematode has three stages in its life cycle—egg, larva, and adult. The cycle takes 38 to 48 days.

The eggs are enclosed in protective flask-shaped cysts—which are the dead, swollen bodies of the females. The cysts are smaller than a pinhead, and each of them contains up to 500 eggs and larvae.

The eggs remain dormant in soil until stimulated to hatch by a chemical released from the roots of host plants. The larvae then migrate to the roots and enter them. In the absence of host plants, the eggs can remain dormant for many years.

COOPERATIVE PROGRAM

The U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) and State departments of agriculture cooperate in a golden nematode control program. The objective of this program is to prevent spread of the pest and to eventually eradicate it.

Work under this program includes survey, quarantine, and control activities.

Survey

Surveys are conducted to detect pest spread and to determine the limits of known infestations.

THE GOLDEN NEMATODE

Background shows normal potato plant (left) and one exposed to heavy nematode attacks.

Greatly magnified portion of infested root:
A, Females just breaking through root surface.

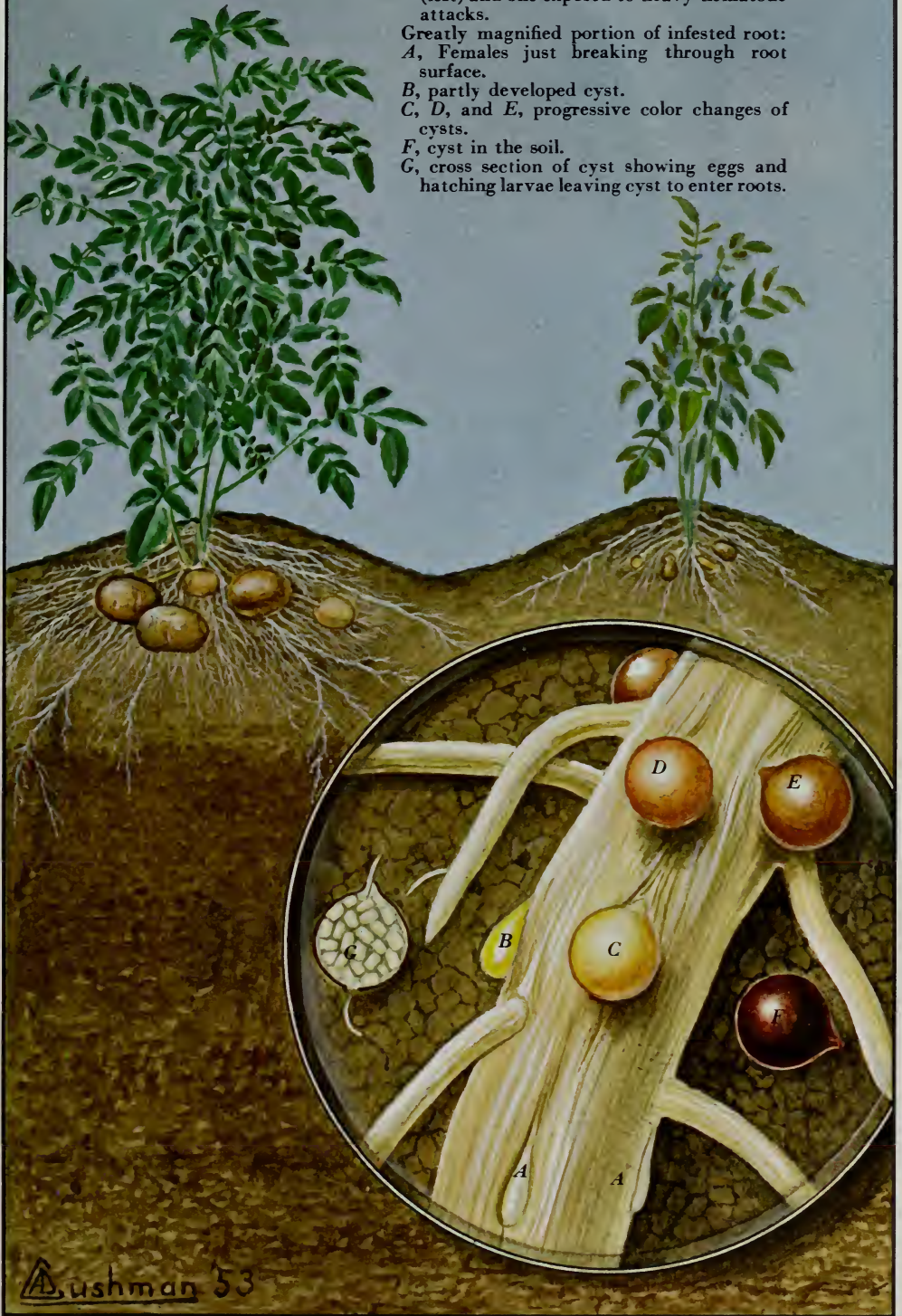
B, partly developed cyst.

C, D, and E, progressive color changes of cysts.

F, cyst in the soil.

G, cyst in the soil.

G, cross section of cyst showing eggs and hatching larvae leaving cyst to enter roots.



All potato fields in and around known infested areas are surveyed on a regular basis. Selected potato fields are surveyed in other areas of the country.

Survey procedure consists of collecting and inspecting soil samples for cysts.

Quarantine

Agricultural quarantine inspectors at United States ports of entry check soil, burlap bags, and packing straw in shipments from foreign countries for hitchhiking nematodes.

Federal and State quarantines restrict the movement of certain materials from infested areas in New York to prevent spread to noninfested areas. Restricted items include potatoes and other root crops; plants (except cuttings); bulbs, corms, rhizomes, and tubers of ornamental plants; soil and sod; hay, straw, and plant litter; used farm equipment; used construction equipment; and used farm machinery.

The planting of seed potatoes in the regulated area is prohibited under the quarantine. Resistant table stock potatoes may be planted on infested land that has been treated.

Control

The control techniques include soil fumigation and the planting of golden nematode resistant potato varieties.

Soil Fumigation

Infested fields are treated with a dichloropropane-dichloropropene mix-

ture or a dichloropropane-dichloropropene-methyl isothiocyanate mixture. Then—as required by New York State regulations—growers plant either a nematode resistant potato variety or a non-host crop for an indefinite period.

Resistant Varieties

The U.S. Department of Agriculture and Cornell University have ongoing programs to develop nematode resistant varieties.

Three varieties have thus far been released—Peconic, Wauseon, and Hudson. All three are comparable in quality to the popular Katahdin variety. In tests, Hudson has yielded up to 40 percent more potatoes than Katahdin.

HOW YOU CAN HELP

You can help prevent the spread of the golden nematode if you—

- Do not use secondhand containers such as burlap bags, crates, and barrels, when harvesting potatoes in the regulated areas.
- Do not bring machinery that has been used on an infested field onto a farm unless it has been steam-cleaned or fumigated.
- Do not spread grader soil and debris from community graders in the regulated areas onto farm lands.
- Notice any unusual damage on your potatoes, report it to your county agricultural agent.

Plant Protection and Quarantine Programs

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